What is claimed is:

1. A method for detecting and/or isolating a nucleic acid molecule having a homopolymeric sequence comprising:

treating a sample containing nucleic acid compounds with an LNA oligonucleotide to thereby detect and/or isolate a nucleic acid molecule having said homopolymeric sequence

2. A method for detecting and/orisolating a nucleic acid molecule having a repetitive element comprising:

treating a sample containing nucleic acid compounds with an LNA oligonucleotide to thereby detect and/or isolate a nucleic acid molecule having the repetitive element.

3. A method for detecting and/or isolating a nucleic acid molecule having a conserved nucleotide sequence comprising:

treating a sample containing nucleic acid compounds with an LNA oligonucleotide to thereby detect and/or isolate a nucleic acid molecule having the conserved nucleotide sequence

4. The method of any one of claims 1 to 3 wherein a sample comprising the nucleic acid molecules is treated with a lysing buffer comprising a chaotropic agent to lyse cellular material in the sample.

5. The method of any one of claims 1 to 4 wherein the LNA oligonucleotide capture probe is covalently attached to a solid support.

6. The method of any one of claims 1 through 5 wherein the LNA oligonucleotide capture probe is synthesized with an anthraquinone moiety and a linker at the 5'-end or the 3'-end of said probe.

7. The method of claim 6 wherein said linker is selected from the group comprising one or more of a hexaethylene glycol monomer, dimer , trimer,

tetramer, pentamer, hexamer, or higher hexaethylene glycol polymer; a poly-T sequence of 10-50 nucleotides in length or a poly-C sequence of 10-50 nucleotides in length or longer; or a non-base sequence of 10-50 nucleotide units in length or longer.

8. The method of claim 5 wherein said solid support is a polymer support selected from the group consisting of a microtiter plate, polystyrene beads, latex beads, a polymer microscope slide or a polymer-coated microscope slide or a microfluidic slide.

9. The method of claim 1 wherein the LNA oligonucleotide capture probe is complementary to a homopolymeric nucleotide comprising at least about one nucleobase that is different than the bases comprising the homopolymeric nucleic acid sequence.

10. The method of any one of claims 1 through 4 wherein the LNA oligonucleotide comprises at least about five repeating consecutive nucleotides.

11. The method of any one of claims 1 through 4 wherein the LNA oligonucleotide comprises at least about ten repeating consecutive nucleotides.

12. The method of any one of claims 1 through 4 wherein the LNA oligonucleotide comprises at least about twenty to twenty-five repeating consecutive nucleotides.

13. The method of any one of claims 1 through 4 wherein the LNA oligonucleotide comprises at least about thirty repeating consecutive nucleotides.

14. The method of any one of claims 1 through 4 wherein the LNA oligonucleotide comprises at least about forty repeating consecutive nucleotides.

15 The method of any one of claims 1 through 4 wherein the LNA oligonucleotide comprises at least about fifty repeating consecutive nucleotides.

16. The method of any one of claims 1 through 15 wherein the LNA oligonucleotide molecule is complementary to a nucleotide sequence consisting substantially of a poly(A) nucleotide sequence.

17. The method of claim 15, wherein said LNA oligonucleotide probe is synthesized with an anthraquinone moiety and a linker and at the 5'-end of said probe, where said linker is selected from the group comprising one or more of a hexaethylene glycol monomer, dimer , trimer, tetramer, pentamer, hexamer, or higher hexaethylene glycol polymer; a poly-T sequence of 10-50 nucleotides in length or a poly-C sequence of 10-50 nucleotides in length or longer; or a non-base sequence of 10-50 nucleotide units in length or longer; and a covalent coupling onto a solid polymer support of said LNA oligonucleotide probe is carried out via excitation of the anthraquinone moiety using UV light.

18. The method of any one of claims 1 through 15 wherein the LNA oligonucleotide molecule is complementary to a nucleotide sequence consisting substantially of a poly(T) nucleotide sequence.

19. The method of any one of claims 1 through 15 wherein the LNA oligonucleotide molecule is complementary to a nucleotide sequence consisting substantially of a poly(G) nucleotide sequence.

20. The method of any one of claims 1 through 15 wherein the LNA oligonucleotide molecule is complementary to a nucleotide sequence consisting substantially of a poly(U) nucleotide sequence.

21. The method of any one of claims 1 through 9 wherein the LNA oligonucleotide molecule is complementary to a nucleotide sequence consisting substantially of a poly(C) nucleotide sequence.

22. The method of claim 18, wherein the LNA oligonucleotide molecule is selected from the following table:

Comp. No.	Oligo Name:	Sequence 5'-:
2	LNA_2.T	5'-biotin-TtTtTtTtTtTtTtTtTtTt
3	LNA_3.T	5'-biotin-TttTttTttTttTttTttTt
4	LNA_T_{10}	5'-biotin-TTTTTTTTTT
5	LNA_T_{15}	5'-biotin-TTTTTTTTTTTTTTT
6	LNA_4.T	5'-biotin-ttTtttTtttTtttTtttTt
7	LNA_5.T	5'-biotin-tttTttttTttttTttttTt
8	LNA_T_{20}	5'-biotin-TTTTTTTTTTTTTTTTTTTT
9	LNA_TT	5'-biotin-ttTTttTTttTTttTTt
10	LNA_TTT	5'-biotin-ttTTTtttTTTtttTTTt

23. The method of claim 18, wherein the LNA oligonucleotide molecule is selected from the following table:

Comp. No.	Oligo Name:	Sequence 5'-:
11	AQ-HEG_3-2.T	AQ-HEG_3-TtTtTtTtTtTtTtTtTtTt
12	AQ-t15-2.T	AQ-t15-TtTtTtTtTtTtTtTtTtTt
13	AQ-c15-2.T	AQ-c15-TtTtTtTtTtTtTtTtTtTt
14	AQ-t10-NB5-2.T	AQ-t10-NB5-TtTtTtTtTtTtTtTtTt

wherein AQ refers to anthraquinone, HEG refers to hexa-ethylene glycol, t15 refers to 15-mer deoxy-thymine, c15 refers to 15-mer deoxy-cytosine, t10-NB5 refers to 10-

mer deoxy-thymine 5-mer non-base, and t refers to DNA thymine and T: LNA thymine.

24. The method of claim 23, wherein the LNA oligonucleotide molecule is selected from the group of oligonucleotides corresponding to Compounds 2 to 10 herein having an anthraquinone in the 5' position instead of biotin.

25 The method of claim 18, wherein the LNA oligonucleotide molecule is selected from the group consisting of a oligonucleotides corresponding to Compounds 2 to 18 herein having an anthraquinone in the 5' position and a linker which is selected from the group comprising one or more of a hexaethylene glycol monomer, dimer , trimer, tetramer, pentamer, hexamer, or higher hexaethylene glycol polymer; a poly-T sequence of 10-50 nucleotides in length or a poly-C sequence of 10-50 nucleotides in length or longer.

26. The method of claim 18, wherein the LNA oligonucleotide molecule is selected from the group a oligonucleotides corresponding to Compounds 2 to 10 herein without the biotin substitution in the 5' position.

27. The method of claim 2 wherein the LNA oligonucleotide capture probe is complementary to a repetitive nucleotide sequence comprising at least about one nucleobase that is different than the bases comprising the repetitive sequence.

28. The method of claim 3 wherein the LNA oligonucleotide capture probe is complementary to a conserved nucleotide sequence comprising at least about one nucleobase that is different than the bases comprising the conserved nucleic acid sequence.

29. The method of anyone of claims 1 through 14, wherein the LNA oligonucleotide comprises at least one nucleotide having a nucleobase that is different from the nucleobases of the remaining oligonucleotide sequence.

30. The method of any one of claims 1 through 20 wherein the −1 residue of the LNA oligonucleotide molecule 3' and/or 5' end is an LNA residue.

31. The method of any one of claims 1 through 23 wherein the LNA oligonucleotide comprises at least about one or more alpha-L LNA monomers.

32. The method of any one of claims 1 through 23 wherein the LNA oligonucleotide comprises at least about one or more xylo-LNA monomers.

33. The method of any one of claims 1 through 31 wherein the LNA oligonucleotide molecule comprises at least about 20 to 50 percent LNA residues based on total residues of the LNA oligonucleotide.

34. The method of any one of claims 1 through 33 wherein the LNA oligonucleotide comprises at least about two or more consecutive LNA molecules.

35. The method of any one of claims 1 through 34 wherein the LNA oligonucleotide comprises modified and non-modified nucleotide molecules.

36. The method of any one of claims 1 through 35, wherein the LNA oligonucleotide capture probe comprises a compound of the formula:

$$5'\text{-}Y^{q}\text{-}(X^{p}\text{-}Y^{n})_{m}\text{-}X^{p}\text{-}Z\text{-}3'$$

wherein X is an LNA monomer, Y is a DNA monomer; Z represents an optional DNA monomer ; p is an integer from about 1 to about 15; n is an integer from about 1 to about 15 or n represents 0; q is an integer from about 1 to about 10 or q = 0; and m is an integer from about 5 to about 20.

37. The method of any one of claims 1 through 36 wherein the association constant (K_a) of the LNA oligonucleotide is higher than the association constant of the complementary strands of a double stranded molecule.

38. The method of any one of claims 1 through 37 wherein the association constant of the LNA oligonucleotide is higher than the disassociation constant (K_d) of the complementary strand of the target sequence in a double stranded molecule.

39. The method of any one of claims 1 through 38 wherein the LNA oligonucleotide capture probe is complementary to the sequence it is designed to detect and/or isolate.

40. The method of claim 39 wherein the LNA oligonucleotide has at least one base pair difference to the complementary sequence it is designed to detect and/or isolate.

41. The method according to claim 40 wherein the LNA oligonucleotide can detect at least about one base pair difference between the complementary poly-repetitive base sequence and the LNA/DNA oligonucleotide.

42. The method of any one of claims 1 through 41 wherein the LNA oligonucleotide comprises a fluorophore moiety and a quencher moiety, positioned in such a way that the hybridized state of the oligonucleotide can be distinguished from the unbound state of the oligonucleotide by an increase in the fluorescent signal from the nucleotide.

43. The method of any one of claims 1 through 32, wherein the T_m of the LNA oligonucleotide is between about 50°C to about 70°C when the LNA oligonucleotide hybridizes to its complementary sequence.

44. The method of anyone of claims 4 through 43, wherein the chaotropic agent is guanidinium thiocyanate.

45. The method of claim 44 wherein the concentration of the guanidinium thiocyanate is at least about 2M.

46. The method of claim 44 wherein the concentration of the guanidinium thiocyanate is at least about 3M.

47. The method of claim 44 wherein the concentration of the guanidinium thiocyanate is at least about 4M.

48. The method of claim 44 wherein the LNA oligonucleotide hybridizes to the repetitive element at a temperature in the range of 20 – 65 °C.

49. The method of claim 48 wherein the LNA oligonucleotide hybridizes to the repetitive element at about 20°C.

50. The method of claim 48 wherein the LNA oligonucleotide hybridizes to the repetitive element at about 37°C.

51. The method of claim 48 wherein the LNA oligonucleotide hybridizes to the repetitive element at about 55°C.

52. The method of claim 48 wherein the LNA oligonucleotide hybridizes to the repetitive element at about 60°C.

53. The method of any one of claims 1 through 52 wherein the LNA oligonucleotide capture probe is adapted for use as a TaqMan probe or Molecular Beacon.

54. The method of any one of claims 1 through 53, wherein the LNA oligonucleotide capture probe hybridizes to complementary sequences of eukaryotic RNA.

55. The method of any one of claims 1 through 54 wherein the LNA oligonucleotide is complementary to the poly(A) tails in eukaryotic mRNA and where the said LNA oligonucleotide is synthesized with an anthraquinone moiety and a linker at the 5'-end of said oligonucleotide, where said linker is

selected from the group comprising one or more of a hexaethylene glycol monomer, dimer , trimer, tetramer, pentamer, hexamer, or higher hexaethylene glycol polymer; a poly-T sequence of 10-50 nucleotides in length or a poly-C sequence of 10-50 nucleotides in length or longer; or a non-base sequence of 10-50 nucleotide units in length or longer; and a covalent coupling onto a solid polymer support of said LNA oligonucleotide probe is carried out via excitation of the anthraquinone moiety using UV light.

56. The method of claims 1 through 55, wherein the eukaryotic mRNA is isolated using the covalently attached LNA oligonucleotide, and detected with nucleic acid probes, such as DNA, RNA or LNA detection probes, using

(i) chemiluminiscence using enzyme-conjugated nucleic acid probes,

(ii) bioluminescence using firefly or bacterial luciferase or green fluorescent protein as reporter molecule,

(iii) ligands incorporated into the nucleic acid probes, such as digoxigenin (DIG) or fluorescein isothiocyanate (FITC) combined with enzyme-conjugated anti-ligand antibodies, or

(iv) biotin-labeled nucleic acid probes combined with enzyme-conjugated streptavidin or avidin

57. The method of claim 56, wherein the eukaryotic mRNA is detected using an LNA detection oligonucleotide combined with a tyramide signal amplification system.

58. The method of claim 56, wherein the eukaryotic mRNA is detected using an LNA detection oligonucleotide, containing a complementary overhang to a free arm in a dendrimer or a branched oligonucleotide conjugated with several digoxigenin, fluorescein isothiocyanate or biotin molecules or fluorochrome molecules, combined with alkaline phosphatase-conjugated or horse radish peroxidase-conjugated anti-digoxigenin, anti- fluorescein isothiocyanate antibodies or streptavidin or detection of fluorescence from the excited fluorochromes.

59. The method of any one of claims 1-58, further comprising contacting the sample with a polymerase and at least one nucleotide.

60. The method of claim 59, further comprising performing said contacting under conditions suitable for generating a plurality of copies of said nucleic acid molecule.

61. The method of claim 59, wherein said conditions comprise exposing the sample to a constant temperature.

62. The method of claim 59, wherein said conditions comprise cycling the temperature of the sample.

63. The method of claim 59, wherein the polymerase comprises a thermally stable polymerase.

64. The method of claim 59 or 63, wherein the polymerase comprises a reverse transcriptase

65. The method of claim 59, wherein the LNA oligonucleotide comprises a label.

66. The method of claim 59, wherein the nucleic acid molecule or LNA oligonucleotide is bound to a solid support.

67. The method according to claim 59 or 65, wherein the at least one nucleotide comprises a label.

68. The method of claim 59, wherein the nucleic acid molecule is comprised with a cell and wherein the cell is stably associated with a solid support.

69. The method of claim 60, wherein the LNA oligonucleotide comprises a fluorescent reporter molecule at one end of the LNA oligonucleotide and a quencher molecule at another end of the oligonucleotide, wherein the quencher is in sufficient proximity to the reporter to quench the fluorescence of the reporter label.

70. The method of claim 69, wherein generating the plurality of copies is detected by detecting increased fluorescence of the reporter molecule.

71. The method of claim 70, wherein the LNA oligonucleotide is cleaved during the step of generating the plurality of copies.

72. The method of any one of claims 69 through 71, wherein the polymerase is rTh polymerase.

73. The method according to claim 59, further comprising adding at least one primer which hybridizes to a sequence in the nucleic acid molecule 5' or 3' of the homopolymeric sequence.

74. The method of any one of claims 1 through 4, wherein the LNA oligonucleotide comprises a fluorescent reporter molecule at one end of the oligonucleotide and a quencher molecule at a second end and wherein the reporter molecule is quenched by the quencher molecule when the LNA oligonucleotide is not hybridized to the nucleic acid molecule.

75. The method of claim 74, wherein hybridization of the LNA oligonucleotide is detected by detecting increased fluorescence of the reporter molecule.

76. The method of claim 74, wherein the LNA oligonucleotide comprises, in addition to a sequence sufficiently complementary to said nucleic acid molecule to specifically hybridize to said nucleic acid molecule, a first and second complementary sequence which specifically hybridize to each other when the oligonucleotide is not hybridized to the nucleic acid molecule,

bringing said quencher molecule in sufficient proximity to said reporter molecule to quench fluorescence of the reporter molecule.

77. The method of any one of claims 59 through 66, further comprising adding a DNA polymerase, RNaseH and E. coli DNA ligase after conversion of the eukaryotic polyadenylated mRNA to first strand complementary DNA under conditions suitable for generating double stranded complementary DNA

78. The method of claim 77 further comprising cloning of said double stranded DNA molecules into a cloning vector thereby generating a library of double stranded complementary DNAs

79. The method of claim 77 where the LNA oligonucleotide complementary to the poly(A) tail sequence in eukaryotic mRNA contains an anchor sequence for a RNA polymerase, such as T7 RNA polymerase

80. The method of claim 78 further comprising adding an RNA polymerase, such as T7 RNA polymerase, under conditions suitable for generating a plurality of RNA copies of said nucleic acid molecule.

81. A kit for detecting and/or isolating a nucleic acid molecule in a sample comprising:

a. an LNA oligonucleotide comprising a nucleotide acid sequence sufficiently complementary to a target nucleic acid molecule which comprises a homopolymeric sequence, a repetitive sequence and/or a conserved sequence, to specifically hybridize to the nucleic acid molecule; and

b. a label.

82. The kit of claim 77, wherein the label is coupled to the LNA oligonucleotide, or to a molecule which is capable of hybridizing to the LNA molecule, or to a nucleotide which can be incorporated into a primer extension product comprising the LNA oligonucleotide.

83. The kit of claim 77, wherein the kit further comprises one or more of a polymerase, at least one nucleotide, at least one primer sequence capable of hybridizing to the nucleic acid molecule or to the LNA oligonucleotide, a buffer, Mg^{2+}, UNG, a control nucleic acid molecule, a nuclease, a restriction enzyme, a solid support, a capture molecule for binding the nucleic acid molecule to a solid support, a capture molecule for binding the LNA oligonucleotide to a solid support, a tyramide amplification molecule, a dendrimer, and a chaotropic agent.

84. The kit of any one of claims 77 through 79, wherein the LNA molecule comprises the formula:

$$5'\text{-}Y^{q}\text{-}(X^{p}\text{-}Y^{n})_{m}\text{-}X^{p}\text{-}Z\text{-}3'$$

wherein X is an LNA monomer, Y is a DNA monomer; Z represents an optional DNA monomer ; p is an integer from about 1 to about 15; n is an integer from about 1 to about 15 or n represents 0; q is an integer from about 1 to about 10 or q = 0; and m is an integer from about 5 to about 20.

85. The kit of any one of claims 77 through 79, wherein the nucleic acid molecule is a eukaryotic RNA.

86. The kit according to claim 81, wherein the LNA oligonucleotide specifically binds to a poly(A) tail sequence in the eukaryotic RNA.

87. The kit of any one of claims 77 through 79, wherein the LNA oligonucleotide is an anchor primer.

88. The kit of any one of claims 77 through 79, wherein the LNA is a Taqman probe or a molecular beacon.

89. The kit of any one of claims 77 through 79, wherein the polymerase is a thermally stable DNA polymerase or a thermally stable reverse transcriptase.

90. The method of claim 54, wherein the LNA oligonucleotide capture probe hybridizes to complementary sequences of yeast RNA.

91. The method of claim 85, wherein the LNA oligonucleotide capture probe hybridizes to complementary sequences of mRNA, rRNA, and/or tRNA.

87. A method for amplifying a target nucleic acid molecule the nucleotide sequence which is complementary to a LNA oligonucleotide capture probe, the method comprising:

providing a sample containing nucleic acid molecules having repetitive base sequences; and,

contacting the nucleic acids released from the sample with at least one LNA oligonucleotide capture probe; and,

subjecting the captured nucleic acids to polymerase chain reaction, using primers to amplify the captured nucleic acid molecules.

88. The method of claim 87 wherein multiple primers are used in multiplex PCR.

89. A kit for isolating a target nucleic acid having a repetitive base sequence, comprising:

an LNA oligonucleotide complementary to the target nucleic acid; and a substrate for immobilizing the LNA oligonucleotide.

90. The kit of claim 89 wherein the substrate is a microchip array.

91. The kit of claim 89, wherein the LNA oligonucleotide is complementary to a homopolymeric nucleotide comprising at least about one nucleobase that is different than the bases comprising the homopolymeric nucleic acid sequence.

92. The kit of claim 89, wherein the LNA oligonucleotide comprises at least about five repeating consecutive nucleotides.

93. The kit of claim 89, wherein the LNA oligonucleotide comprises at least about ten repeating consecutive nucleotides.

94. The kit of claim 89, wherein the LNA oligonucleotide comprises at least about twenty to twenty-five repeating consecutive nucleotides.

95. The kit of claims 92 to 94 wherein the LNA oligonucleotide molecule is complementary to a nucleotide sequence consisting substantially of a poly(A) nucleotide sequence.

96. The kit of claims 92 to 94, wherein the LNA oligonucleotide molecule is complementary to a nucleotide sequence consisting substantially of a poly(T) nucleotide sequence.

97. The kit of claims 92 to 94, wherein the LNA oligonucleotide molecule is complementary to a nucleotide sequence consisting substantially of a poly(G) nucleotide sequence.

98. The kit of claims 92 to 95, wherein the LNA oligonucleotide molecule is complementary to a nucleotide sequence consisting substantially of a poly(U) nucleotide sequence.

99. The kit of claims 92 to 95, wherein the LNA oligonucleotide molecule is complementary to a nucleotide sequence consisting substantially of a poly(C) nucleotide sequence.

100. The kit of claim 89, wherein the LNA oligonucleotide is substantially homologous to the target nucleic acid sequence.

101. The kit of claim 89, wherein the LNA oligonucleotide hybridizes to a target nucleic acid sequence in the presence of a chaotropic agent.

102. The kit of claim 101, wherein the chaotropic agent is guanidinium thiocyanate.

103. The kit of claim 101, wherein the concentration of the guanidinium thiocyanate is at least between about 2M to about 5M.

104. The kit of claims 89 to 103 wherein the NA oligonucleotide hybridizes to the repetitive element at a temperature in the range of between about 20 – 65 °C.

105. A method for isolating RNA from infectious diseases organisms wherein the genome of the infectious disease organism is comprised of RNA, the method comprising:

providing a sample containing genomic RNA; and,

treating the sample with a lysing buffer containing a chaotropic agent to lyse cellular material in the sample, dissolve the components and denature the genomic RNA in the sample; and,

contacting the genomic RNA released from the sample with at least one capturing LNA oligonucleotide probe, wherein, the capturing probe being substantially complementary to a consecutively repeating nucleic acid base in the genomic RNA.

106. The method of claim 105, wherein the chaotropic agent is guanidinium thiocyanate.

107. The method of claim 106, wherein the concentration of the guanidinium thiocyanate is between about 2M to about 5M.

108. The method of claim 105 wherein the T_m of the LNA oligonucleotide capture probe when bound to its complementary genomic RNA sequence is between about 55°C to about 70°C.

109. The method of claim 105, wherein the genomic RNA is protected from degradation by RNAse inhibitors in the presence of the chaotropic agent.

110. The method of claim 105, wherein the genomic RNA is protected from degradation by RNAse inhibitors when hybridized to the LNA oligonucleotide capture probe.

111. The method of claim 109, wherein the genomic RNA is isolated from retroviruses.

112. The method of claim 111, wherein the retrovirus is HIV.

113. The method of claim 109, wherein the isolated genomic RNA is used to genotype RNA viruses.

114. The method of claim 109, wherein the isolated genomic RNA is used for diagnosis of an infectious disease organism in a patient suffering from an infectious disease.

115. A composition comprising an LNA/DNA mixmer oligonucleotide capture probe wherein the LNA/DNA mixmer comprises at least about ten repeating consecutive nucleotides.

116. The composition according to claim 115, wherein the LNA/DNA oligonucleotide mixmer comprises at least about twenty-five repeating consecutive nucleotides.

117. The composition according to any of claims 115 or 118, wherein the LNA/DNA oligonucleotide mixmer is complementary to a poly(G) sequence.

118. The composition according to any of claims 115 or 118, wherein the LNA/DNA oligonucleotide mixmer is complementary to a poly(U) sequence.

119. The composition according to any of claims 115 or 118, wherein the LNA/DNA oligonucleotide molecule is complementary to a poly(C) sequence.

120. The composition according to any of claims 115 or 118,, wherein the LNA/DNA oligonucleotide molecule is complementary to a poly(A) sequence.

121. The composition according to any of claims 115 or 118,, wherein the LNA/DNA oligonucleotide molecule is complementary to a poly(T) sequence.

122. The method of anyone of claims 1 through 53, wherein the detection and/or isolation of a nucleic acid is carried out under high stringency hybridisation condisiton using low salt concentration, optionally after treating the sample with a lysing buffer comprising a chaotropic agent.

123. The method of claim 122 wherein said chaotropic agent is GuSCN in a concentration of at least 4 M.

124. The method of claim 122 or 123 wherein the binding buffer contains NaCl or LiCl.

125. The method of claim 124 where the NaCl or the LiCl concentration is less than 100 mM.

126. The method of claim 125 where the NaCl or the LiCl concentration is less than 50 mM.

127. The method of claim 125 where the NaCl or the LiCl concentration is less than 25 mM.

128. The method of claims 122 through 128 where the detection or hybridisation is carried out at at least 25 °C.

129. The method of claims 122 through 128 where the detection or hybridisation is carried out at at least 37 °C.

130. The method of claims 122 through 128 where the detection or hybridisation is carried out at at least 50 °C.